

Claims

- 1 1. Method for interference suppression for TDMA and/or FDMA transmission,
2 which at least approximately can be described as pulse amplitude modulation,
3 with an arbitrary number of receive antennas, which comprises the following
4 step:
5 a) filtering of at least one complex-valued received signal $r_i[k]$ of one
6 receive antenna with a filter with complex-valued coefficients $f_i[k]$ for
7 generation of at least one output signal $y_i[k]$;
8 b) forming at least one projection of at least one output signal $y_i[k]$ onto a
9 vector \mathbf{p}_i which is assigned to this output signal $y_i[k]$;
10 c) summing of a majority, especially all of the output signals $y_i[k]$ for
11 forming a sum signal $s[k]$; and
12 d) feeding the sum signal $s[k]$ into a device for detection, especially
13 equalization.
- 1 2. Method as recited in Claim 1,
2 wherein at least two received signals $r_i[k]$ are available and the corresponding
3 at least two outputs $y_i[k]$ are projected onto identical vectors in step b).
- 1 3. Method as recited in Claim 1,
2 wherein feedforward filters of a DFE with real-valued feedback filter are used
3 for filtering of the received signals in step a), which are optimized
4 systematically,
5 in particular according to the criteria ZF, MMSE, or impulse truncation.
- 1 4. Method as recited in Claim 1,
2 wherein the signals after the projections are utilized for optimization of the filter
3 coefficients.
- 1 5. Method as recited in Claim 1,
2 wherein an arbitrary adaptive algorithm is used for adjustment of the filter
3 coefficients of the at least one complex-valued filter.
- 1 6. Method as recited in Claim 5,
2 wherein the adaptive algorithm for adjustment of the filter coefficients utilizes a
3 training sequence which is known at the receiver.

- 1 7. Method as recited in Claim 5,
2 wherein a blind adaptive algorithm is used for adjustment of the filter
3 coefficients.

- 1 8. Method as recited in Claim 1,
2 wherein the corresponding orthogonal complements of the projections of at
3 least one filtered output signal $y_i[k]$ are calculated.

- 1 9. Method as recited in Claim 1,
2 wherein for the case of transmit antenna diversity, at least a part of the
3 transmit signals is interpreted as interference and treated with a method
4 according to claim 1.

- 1 10. System for interference suppression for TDMA and/or FDMA transmission,
2 which at least approximately can be described as pulse amplitude modulation,
3 comprising
4 - an arbitrary number of receive antennas;
5 - at least one filter device with complex-valued coefficients $f_i[k]$ for filtering of
6 at least one complex-valued received signal $r_i[k]$ of one receive antenna for
7 forming at least one output signal $y_i[k]$;
8 - at least one projection device for forming a projection of the at least one
9 output signal $y_i[k]$ onto a vector \mathbf{p}_i which is assigned to this output signal;
10 - a summation device for summing a majority, in particular all output signals
11 $y_i[k]$ for forming a sum signal $s[k]$; and
12 - a detection device which processes the sum signal $s[k]$.

10027657-131901